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# A Review on Sending a Real Time Data of Brain Signal to the Cloud Server

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**ABSTRACT:** In this paper, we introduce a Human Brain Computer Interfacing (BCI) that allows users to interact with smart phone devices using brain signals. Two applications are introduced for Android-based devices: Smart App and Image view. Smart App enables users to select and run any installed application on the device while Image View allows viewing and manipulating images. Smart mobile devices are widely used nowadays in daily life activities. Our proposed system suggests that the brain signal will directly transfer to the cloud server and then it will transfer on the application which is used by user. Our proposed system must be used to health care. In rural areas poor people can ' t afford the brain diagnosis, so the idea is to related embedded device which can help poor people who are suffering from mental disorder to show their brain signal report to the doctor may seat from the city via internet using cloud server technology. Where the doctor can monitor the real time wave forms the patient waveform in this Smart phone or a desktop.

**KEYWORDS:** Human Brain-Computer Interface (BCI), electroencephalography (EEG).

## I. INTRODUCTION

Technology of human brain-computer interface (BCI) has potential extensibility in combination with ubiquitous environments [1]. To use BCI in the ubiquitous environments, the BCI system must be implemented in mobile and common devices. In this paper, we report implementation of a simple BCI composed of mobile and common devices. All of the components were available inexpensively. Because of using a smart phone and its interface, the system can connect a BCI System with ubiquitous environments easily. Tablets and Smartphone s have recently become essential devices for people worldwide. Advances in single- and multi-touch screen
technology have allowed designing such smart devices that can be controlled by direct interaction through physical touch. This requires users to use their hands to interact with the touch screen which might be inconvenient in some cases, for example, while driving or exercising. It also neglects millions of users around the world with motor impairments who cannot move their hands to use the device. The progress in designing low-cost wireless EEG recording headsets has inspired the development of Brain Computer Interface (BCI) applications that are specifically designed for mobile devices to take advantage of mobile device portability. Recently, developing BCI applications for mobile devices has started to gain attention. Applications such as Neurophone, Smartphone brain scanner application is another example of BCI mobile
applications which aims at capturing real-time EEG imaging of brain activity [2]. In order to utilize the power of BCIs

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in mobile applications, more work is still needed to facilitate their use for the disabled with reasonable accuracy. Computational complexity of BCI applications represents another challenge that needs to be addressed to enable running BCI applications entirely on mobile devices. We introduce two brain-controlled applications for Android-based devices. The first application SmartApp allows selecting and running any installed application on Android-based devices using EEG activity. The second application Image View enables browsing through images and performing simple manipulations of the displayed image, To our knowledge, these applications represent the first of a kind to utilize BCI to run applications and interact with images on an Android-based device.

## II. LITERATURE SURVEY

In 2013,[9] Author Blondet, M.V.R.; Badarinath, A. ; Khanna, C. ; Zhanpeng Jin says Mobile devices and cloud computing based on a real-time BCI system detects the user to identify mental states. Android application is a component running three parts. Specifically, the window can display graphical and data acquired from continuous EEG headset in a real-time; EEG data server can communicate with facial expressions to indicate, according to an analysis of the user's mental states; Time and means analysis to investigate the effects of mental behavior for a long period. In 2014, Author Shunichi Saeki, Hiroshi Komaki, and Ryota Horie says implementation of a simple brain computer interface which was composed of a compact brain sensor signal recording device, a Smartphone, and microcomputers with ZigBee modules. Technology of brain-computer interface (BCI) has potential extensibility in combination with ubiquitous environments. To use BCI in the ubiquitous environments, the system must be implemented in mobile and common devices[1] In 2015,[8] Author Amr S. Elsawy and Seif Eldawlatly introduced is two novel P300-based Android applications that allow users to interact with Android-based smart devices using a consumer EEG recording headset. The introduced applications run entirely on an Android-tablet during both the training and testing phases. Earlier there is no more work on sending brain signal waveform to the cloud server, only sending brain signal waveform to the device where it will be extracting on it with the help of ZigBee module or etc. In Our proposed system we will approach is to sending this waveform to the cloud and extract it on application whenever it required.

## III. PROPOSED PLAN

Earlier there is no more work on sending brain signal waveform to the cloud server, only sending brain signal waveform to the device where it will be extracting on it with

the help of ZigBee module or etc. In Our proposed system we will approach is to sending this waveform to the cloud and extract it on application whenever it required. It may be possible while brain sensor waveform monitor via internet cloud server and it will do on one android based application. Our proposed system must be used to health care. In rural areas poor people can ’ t afford the brain diagnosis, so the idea is to related embedded device which can help poor people who are suffering from mental disorder to show their brain signal report to the doctor may seat from the city via internet using cloud server technology. Where the doctor can monitor the real time brain signals waveforms of the patient in the Smartphone or a desktop.

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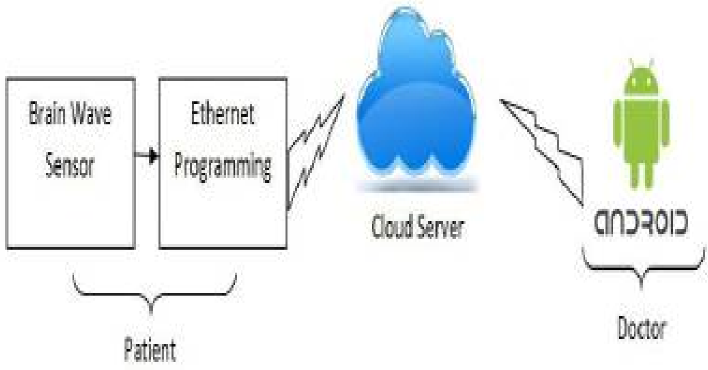


Fig 1. Block diagram of proposed plan.

## IV. WORK FLOW CHART

As per the proposed method for sending the brain signal waveform to the cloud server firstly we will collect the brain sensor live waveforms from human brain and then send these brain sensor live waveform to the controller with the help of bluetooth module. Then it will collect at controller and it will send these brain sensor waveform to the Ethernet module. After that with the help of Ethernet it will send to the cloud server and from the cloud server it will real time monitor on any android based application.

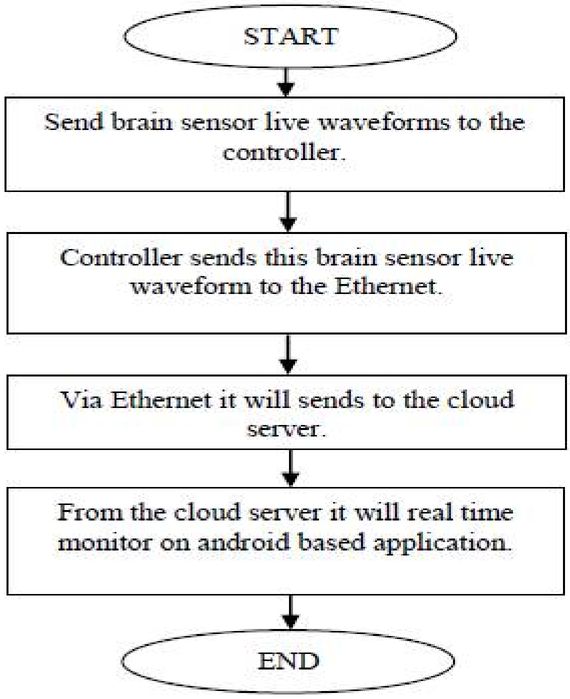


Fig. 2. Work Flow chart for proposed plan.

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## V. HARDWARE USED

### A. An Arduino board

Other circuit features and applications, including an Arduino board with ingredients that complement the Atmel 8-bit AVR microcontroller is 16 or 32. Shield interchangeable connectors that are standard for a variety of add-on module that is connected to the CPU board called Arduino users is an important aspect. Some of the shield directly to the Arduino board to communicate with a variety of pins, but the shield is used often steep and individually addressable via parallel Isquare- C serial bus can be. The official Arduino Mega AVR series chips, especially Atmega8, ATmega168, ATmega328, Atmega1280, and Atmega2560 are used. A handful of other processors have been used by Arduino compatibles. In some designs, such as lily pads, with a certain form factor and because of the 8 MHz to run the ship to prevent the distribution of the voltage regulator of the Board, and (in some variants or ceramic resonator), a 5V linear regulator, a 16 MHz crystal oscillator, although are included. Computer programmers use a simple straight-forward than the form allows an Arduino uses. On a conceptual level, while using the Arduino integrated development environment, all boards are programmed over a serial connection. Its implementation varies depending on the hardware version. There are some serial Arduino circuit board, the RS-232 and TTL logic level signals, the level of labor for the conversion between the levels. Current Arduino boards Universal Serial Bus (USB) isapplied to the chips used, such as FT232 FTDI USB adapter is programmed by serial. After such a different serial-to-USB firmware FTDI chips with the AVR chip with their own place reprogrammable through the ICSP header, this is the model of the Board or the Board of the United Nations. Arduino Mini and such informal Arduino, serial adapter board or a detachable USB cable, Bluetooth or other methods of service as other variables, rather than the traditional microcontroller Arduino IDE devices are used, when used with standard AVR ISP programming.

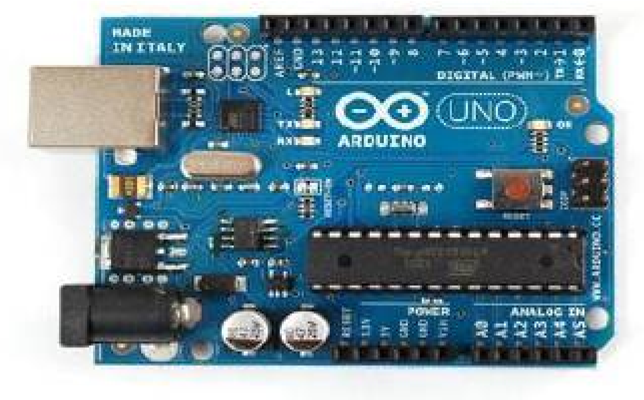


Fig. 3. An Arduino Board

### B. NeuroSky

The human brain is composed of billions of interconnected neurons. Thought patterns and emotional communication between neurons are represented. Every interaction between neurons creates a very small electrical discharge; these measures alone or charged out of the skull is impossible. However, together with waves of this activity can be measured by thousands of concurrent discharge, which. Neural interfaces are the result of different patterns of brain states. The samples will be characterized by waves of different amplitudes and frequencies; For example, waves

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associated with concentration between beta waves, 12 Hz, flexibility and peace of mind to the 30, 8 and 12 Hz Alpha waves are waves, which are associated with the state. All electrical appliances to create some level of (muscle contraction, NeuroSky devices blinks to identify the unique wave patterns associated with different patterns of how.) Waves (the light bulb), Brain waves that caused the intervention, the "voice" Why not hold a person's head EEG reading devices. Trying to hear through the waves, to measure the mental activity on a big concert conversation. Earlier, strict cheated problem by increasing signal strength and data signal from the EEG equipment to measure the brain's electrical activity through the application to control the atmosphere or the carrier solution.

**C. Arduino Ethernet shield**

Ethernet Arduino microcontroller board based on the ATmega328. 14 digital input / output pins, 6 analog inputs, a 16 MHz crystal oscillator, a Robin -45 connection, a power jack, an ICSP header, and a reset button. NB: Pins 10, 11, 12 and 13 with Ethernet interface and should not be used for other departments are reserved. Available in 9, 4 available to reduce the number of output pins comment PWM. Optional Power over Ethernet segment and can be connected to the board. Ethernet board is different from the others, but not a WizNet Ethernet interface onboard USB serial driver chip. It is the same interface found on the Ethernet shield. Network service onboard SD Accessible via the Library, which is a Micro SD card reader, can be used to store files on. Pin 10 WizNet interface is reserved; FTDI USB serial adapters for the SD card and a USB cable or Sparkfun and Adafruit FTDIstyle basic USB-to-serial breakout board S-6-pin to 4-pin serial programming header is compatible with. Support, automatic reset feature by pressing the reset button does not allow you to upload the drawing board. USB serial adapter, the Arduino Ethernet adapter match.

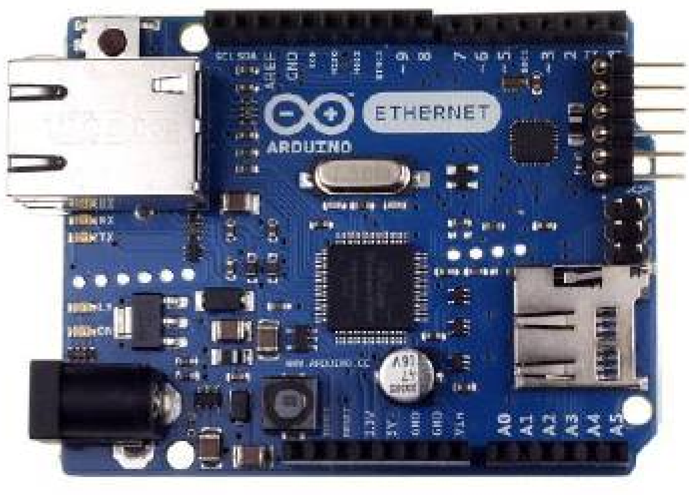


Fig. 5. An Arduino Ethernet Board

**D. Bluettoth HC05-Module**

Bluetooth Personal Area Network (PAN) wireless technology standard for exchanging data over short distances is to build (2,485 tarangalambi small 2.4 GHz radio waves in the UHF band used to discuss). About 10 meters (30 feet) range. Cambridge Silicon Radio BC417 2.4 GHz Bluetooth
radio chip is based modules. It is used with an external memory of 8 MB flash chip that is complex. Low-cost Arduino Bluetooth and other information in this sub-sector working process wego.co.in well.

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Fig. 6. Bluetooth HC05 Module

## VI. CONCLUSIONS AND FUTURE WORK

It may be possible while brain sensor waveform monitor via internet cloud server and it will do on one android based application. Earlier there is no more work on sending brain single waveform to the cloud server, my approach is to sending this waveform to the cloud and extract it on application whenever it required. We introduced Android applications that allow users to interact with Android-based smart devices using a consumer EEG recording headset. The introduced applications run entirely on an Android-tablet. A brain – computer interface is a communication and control channel that does not depend on the brain ' s normal output. At present, the main impetus to BCI research and development is the expectation that BCI technology will be valuable for those whose severe neuromuscular disabilities prevent them from using conventional augmentative communication methods.

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